

What is claimed is:

1. A method of maintaining a network connection in an optical network, the optical network including a plurality of switching nodes and an egress switching node, a plurality of spans including working and protecting fibers operatively connecting the switching nodes, and carrying a plurality of channels, the method comprising:

5 obtaining channel assignment data including the channels assigned to the network connection on each of the plurality of spans used by the network connection;

 propagating the channel assignment data to the switching nodes in the optical network;

 storing, at the switching nodes, the channel assignment data;

10 monitoring the optical network for a failed span and notifying the optical network in response to the failed span, wherein the switching nodes perform a switching operation in response to the notification in order to switch the network connection to the protecting fibers;

 determining which channel the network connection utilized on the failed span based on the channel assignment data and the notification of the failed span; and

15 dropping the channel selected by said determining step from the protecting fiber at the egress switching node.

2. The method according to claim 1, wherein the channels are wavelength division multiplexed channels and the optical network is a wavelength division multiplexed optical
20 network.

3. The method according to claim 1, wherein the channels are time division multiplexed channels and the optical network is a time division multiplexed optical network.

4. The method according to claim 1, wherein the channels are time division multiplexed channels at least some of which are carried over different wavelengths and wherein the optical network is a TDM over WDM optical network.

5. The method according to claim 1, wherein the optical network is compliant with SONET ("Synchronous Optical Network") or SDH ("Synchronous Data Handling") protocols, said notifying step utilizing a K-byte in a SONET/SDH frame to notify the optical network of the span failure and an identify of the failed span.

6. The method according to claim 1, wherein the optical network is a ring network, wherein the switching nodes perform a line switching operation in response to the notification in order to switch the network connection to the protecting fibers.

7. The method according to claim 1, wherein the method maintains a plurality of network connections,

said obtaining step obtaining channel assignment data including the channels assigned to each of the network connections on each of the plurality of spans used by the network connections;

said monitoring step monitoring the optical network for a failed span and notifying the optical network in response to the failed span, wherein the switching nodes perform a

switching operation in response to the notification in order to switch the network connections to the protecting fibers;

determining which channels the network connections utilized on the failed span based on the channel assignment data and the notification of the failed span; and

5 dropping the channels selected by said determining step from the protecting fiber at the egress switching node(s).

8. An egress optical switch node operatively connected to an optical network carrying a network connection using a plurality of channels and over a plurality of switching
10 nodes connected by a plurality of spans including working and protecting fibers, the egress optical switch node comprising:

a channel assignment database containing the channels assigned to the network connection on each of the plurality of spans used by the network connection; and

a controller operatively connected to said channel assignment database, said
15 controller configuring the egress optical switch node to drop a selected channel from the protecting fiber in response to a switch operation on the optical network;

said controller determining the selected channel by accessing the channel assignment database and according to which channel was utilized by the network connection on a working fiber of a failed span that triggered the switch operation.

20

9. The egress optical switch node according to claim 8,
said controller obtaining channel assignment data including the channels assigned to the network connection on each of the plurality of spans used by the network connection;

said controller storing the channel assignment data in the channel assignment database;

said controller receiving a notification from the optical network in response the switching operation;

5 said controller determining the selected channel according to which of the channels the network connection utilized on the failed span based on the channel assignment data and the received notification of the failed span,

wherein the egress optical switch node drops the selected channel selected by said determining step from the protecting fiber at the egress switching node.

10

10. The egress optical switch node according to claim 8, wherein the channels are wavelength division multiplexed channels and the optical network is a wavelength division multiplexed optical network.

15

11. The egress optical switch node according to claim 8, wherein the channels are time division multiplexed channels and the optical network is a time division multiplexed optical network.

20

12. The egress optical switch node according to claim 8, wherein the channels are time division multiplexed channels at least some of which are carried over different wavelengths and wherein the optical network is a TDM over WDM optical network.

13. The egress optical switch node according to claim 8, wherein the optical fiber ring is compliant with SONET ("Synchronous Optical Network") or SDH ("Synchronous

Data Handling”) protocols, said controller receiving a K-byte in a SONET/SDH frame as the notification.

14. The egress optical switch node according to claim 9, wherein the optical network
5 is a ring network, wherein the switching nodes perform a line switching operation in response to the notification in order to switch the network connection to the protecting fibers.

15. An optical network including an egress optical switch node according to claim 8.